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ABSTRACT

Four experimental studies were conducted to assess the differences in effectiveness of self-confrontation via TV when used exclusively and in combination with group discussion, discrimination training (training in the use of interaction analysis), and practice in a scaled-down situation (peerteaching) on "the indirectness" of future secondary school teachers. The results suggest that: self-confrontation alone had practically no effect; self-confrontation with a focus provided by group discussion had an effect after a second trial; and discrimination training had a negative effect or no effect at all. Self-confrontation combined with discrimination training and the opportunity for practice in a Microteaching situation (with feedback) had desirable effects. The findings and their implications for teacher education are discussed in this paper. (Author)

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Paper presented at the Annual Meeting of the American Educational Research Association. New Orleans 1984.

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Four experimental studies were conducted to assess the differences in effectiveness of self-confrontation via TV when used exclusively and in combination with group discussion, discrimination training (training in the use of interaction analysis), and practice in a scaled-down situation (peerteaching) on "the indirectness" of future secondary school teachers . The results suggest that: self-confrontation alone had practically no effect; self-confrontation with a focus provided by group discussion had an effect after a second trial; discrimination training had a negative effect or no effect at all. But self-confrontation combined with discrimination training and the opportunity for practice in a Microteaching situation (with feedback) had desirable effects. The findings and their implications for teacher education are discussed in this paper.

CONTENT

1.) THEORETICAL FRAMEWORK 1

2.) PURPOSE OF THE STUDIES 1

3.) THE STUDIES 2

3.1. Study 1 : The Effects of Self-confrontation via TV vs. the Absence of Self-confrontation 2

3.2. Study 2 : The Effects of Self-confrontation via TV plus Focus Provided by Group Discussion vs. Self-confrontation via TV without Group Discussion 16

3.3. Study 3 : The Effects of Self-confrontation via TV plus Focus Provided by Discrimination Training (Interaction Analysis Training) vs. Self-confrontation via TV without Focus 27

3.4. Study 4 : The Effects of Self-confrontation via TV and Discrimination Training plus Practice with Feedback (One Micro-teaching Cycle) 39

4.) SUMMARY / CONCLUSIONS 45

5.) REFERENCES 49

1.) Theoretical Framework

Since the mid 1960's, self-confrontation via TV has become a widely used component in teacher education. Its conceptual base, however, seems to be usually vague and rarely explicit. TV is most commonly added to already existing traditional teacher education procedures. When used this way, the effects on teacher performance are questionable - though this instrument is perceived favorably and rated optimistically by teacher educators and recipients. As Fuller and Manning (1973) point out in their research report, self-confrontation is a stressful, arousing experience with potential for harm as well as help; sometimes performance is improved, sometimes decrements are observed. According to these authors, improvements are more likely to occur when the training includes additional components like: goal specification through discrimination training and/or group discussion and other types of focus, and opportunities for applying the behavioral changes in simulated or scaled-down practice situations (like Microteaching). In line with these considerations the following series of studies was done.

2.) Purpose of the Studies

Four small-scale experimental studies were conducted and integrated into the context of regular preservice secondary teacher training courses offered by the University. The participants had selected the courses from a number of choices from the Department of Education in order meet credit requirements. These courses aimed at the more frequent use of an indirect influence rather than a direct influence , as defined by Flanders 1970), in order to increase the rate of initiating participation in the peer group. For the expanded Flanders Interaction Category System (FIAC), see section 3.4.3. These main components were tried out with respect to their effectiveness for reaching the following course goals: an increase on self-realism through self-confrontation via TV (as described by Fuller and Manning, 1973), focus provided by group

feedback discussion or discrimination training, and training in a scaled-down Microteaching-type situation (discrimination training, practice, feedback).

These components were compared in the different studies:

Study 1 :	Self-confrontation via TV	versus	no self-confrontation
Study 2 :	self-confrontation via TV plus group discussion	versus	self-confrontation via TV only
Study 3 :	self-confrontation via TV plus discrimination training (interaction analysis training)	versus	self-confrontation via TV only
Study 4 :	self-confrontation via TV plus discrimination training, plus practice in a scaled-down situation plus group discussion	versus	self-confrontation via TV plus discrimination training plus group discussion.

3.) The Studies

3.1. Study I:
The Effects of Self-Confrontation via TV vs. no Self-Confrontation

3.1.1. Participants of the Study

25 university students (2 drop-outs; 11 female, 14 male; $\bar{x}$ = 4,6 semesters of study) from various subject matter areas volunteered for the study. They were randomly assigned to three groups of five students and two groups of six. The groups were randomly assigned to either an experimental or a control condition. So 3 groups of 5 participants were in the comparison group and 2 groups of six were in the experimental group.

3.1.2. Design and Treatment

As a first step, all participants received a 2-hour introduction to the course goals and organization (1). Then all participants were asked to teach a 10-15 minute long pretest-lesson on a self-selected topic to 5 or 6 members of their group. The participants were asked to consider the interests and academic levels of their "students" as the topics were chosen and taught. The peers were instructed not to role-play, but to behave "naturally". The lesson was to be a "Teacher Response Lesson" (TRL). So the participants were instructed mainly to encourage their peers to express their ideas and to respond to them constructively. The participants were asked to choose similar topics for all tests. After one day they taught a post-test 1-lesson, and after 2 days a posttest 2-lesson. The pre-post 1 - post 2 lessons were taught to different groups. All tests were videotaped. For the experimental group, selfconfrontation via TV was provided after the pre-test. Each participant individually viewed his or her videotape of the pre-test for about 15 minutes. Here, with respect to the goals of the course, the initiation of greater peer group participation through a more responsive type of discussion moderator behavior, the participants were to look for discrepances between the experience of their performance and their performance as observed on the videotapes.

The comparison group received no treatment at this stage. This latter group had the same self-confrontation after posttest 1 while the experimental group received no treatment.

The following figure illustrates design and treatment of the study:

---

(1) This was done to avoid behavioral changes from pre- to posttest merely because the participants did not know what was expected from them in the pretest.

Figure 1:

Design and Treatment of Study 1

General information on course goals and course organization.

Experimental group (n = 11)	Comparison group (n = 14)
pretest 10-15 min. to 5-6 peers	pretest 10-15 min. to 5-6 peers
Self-confrontation via TV (individually for about 15 min.)	—
posttest I 10-15 min. to 5-6 peers	posttest I 10-15 min. to 5-6 peers
—	Self-confrontation via TV (individually for about 15 min.)
posttest II 10-15 min. to 5-6 peers	posttest II 10-15 min. to 5-6 peers

3.1.3. Data Source

Two independent observers coded all lessons from the videotapes with an expanded version of the Flanders Interaction System consisting of 16 categories. The following table shows the categories used for this study:

Table 1.1 The Expanded FIAC System Used in Study 1 (1)

		Cat.	Description
TEACHER TALK	Indirect Influence	1	Acceptance of feelings
		2	Praise/encouragement
		3	Acceptance and use of students' ideas
		31	Acknowledgement of students' ideas (hum, repeating, or rephrasing)
		32	Use of students' ideas (analyzing, clarifying, probing, summarizing, relating to prior statements)
		42	Broad questions
		40	Questions-managerial (e.g. calling on students)
	Direct Influence	4	Asking questions
		41	Narrow questions
		5	Lecturing
		6	Giving directions
		7	Criticism
STUDENT TALK		81	Student talk - response to the teacher
		82	Student talk - response to another student
		8	Student talk - response
		91	Student talk - initiated to the teacher
		92	Student talk - initiated to another student
		9	Student talk - initiative
		101	Silence
		102	Confusion

Definition of the two Flanders ratios:

Pupil Talk Ratio: $PTR = \frac{\text{cat. 8 + cat. 9}}{\text{cat. 1 ... cat. 10}}$

Indirect/Direct Ratio: $IDR = \frac{\text{cat. 1 + 2 + 3 + 4}}{\text{cat. 1 ... cat. 7}}$

1) For the 10 FIA categories, see study 3.

The observers were trained on the basis of Minicourse 4, part 1 (FWLERD, 1972/73). Their agreement with a standard observer was: π = 0.84 (Scott coefficient, modified by Flanders 1967) (observer A) and π = 0.86 (observer B). Their agreement with each other coding the tapes of studies 1 and 2 was π = 0.86. And their intra-observer agreement before and after coding the tapes of both studies was π = 0.91 (observer A) and π = 0.89 (observer B), respectively. The tapes of studies 1 and 2 were given to the observers in random order. The observers did not know which tape belonged to which study or test.

The Wilcoxon test was used for the statistical comparison of pre-post I, pre-post II, and post I-post II. Mann and Whitney's U-test was used for the comparison of the rates of change of the experimental and comparison groups from pre- to posttest I, pre- to post II, and posttest I to posttest II. In addition, effect sizes for two Flanders ratios (Flanders 1970) were computed for each study for the final status (comparison of the posttests of the experimental and comparison groups). The formula used to compute the effect size statistic, $\underline{d}$, in this meta-analysis was:

$$\underline{d} = \frac{\bar{Y}_E - \bar{Y}_E}{\sqrt{\frac{(N_E - 1)\, S_E^2 + (N_C - 1)\, S_C^2}{N_E + N_C - 2}}}$$

where: $\bar{Y}$ is the mean for the comparison (C) or experimental (E) groups.
N is the number in the comparison or experimental groups, and
S^2 is the variance of the comparison or experimental groups.

The reader may note that the denominator for $\underline{d}$ is different than that recommended by Glass, 1977. The denominator used in this meta-analysis is the within-group standard deviation whereas Glass uses the control group standard deviation. There are several reasons for this. The Glass procedure is based on the assumption that the standard deviations for the control and experimental groups are significantly different. The reason is that the treatment may have an effect on the experimental group standard deviation as well as on the experimental group mean, thereby producing a treatment by subject interaction. If this is true,

the standard deviation of the control group would be the proper denominator in the formula for $\underline{d}$. This can be easily checked by comparing S_E and S_C. Let the statistic $\frac{S_E}{S_C}$ be defined by the

$$\underline{d} = \frac{S_E}{S_C}$$

If $\frac{S_E}{S_C}$ is appreciably larger or smaller than 1, there would be reason to believe that there is a treatment by subject interaction, and then the Glass procedure would be preferable.

However, there are two important advantages to using the within-group standard deviation rather than the control group standard deviation. The first is that the control group standard deviation is likely to have more sampling error than the within group standard deviation. It has been suggested (Hunter, Schmidt, Jackson, 1982) that the within-group standard deviation has only about half the sampling error of the control group standard deviation, and, therefore the effect size would be increased accordingly. The second advantage is that for some of the studies used in this meta-analysis, F or t is reported without standard deviations. Hence, it would be impossible to use the Smith and Glass procedure without dropping these studies from the meta-analysis (G.D.Borich, University of Texas at Austin, personal communication).

3.1.4. Results

Tables 1.2. - 1.8. summarize the results.

Table 1.2 : Comparison of Change Rates Between Pretest and Posttests I of the Experimental (n=11) and Comparison (n=14) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	U-Test p<	Comparison Group $\bar{x}$ (%)	s	U-Test p<	U-Test: Comparison of Change Rates p<
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post	0.00	0.00		0.00	0.00		
2	pre	0.07	0.72	0.05	0.20	0.85	---	---
	post	0.22	0.40		0.00	1.27		
3	pre	4.48	3.54	---	4.80	3.57	---	0.05
	post	2.48	2.83		0.81	4.05		
31	pre	2.94	2.33	---	4.15	3.53	---	---
	post	1.96	1.75		4.78	3.55		
32	pre	1.52	1.67	---	0.65	0.88	0.01	0.02
	post	0.50	1.40		1.83	1.62		
4	pre	5.83	4.18	---	4.20	2.48	---	---
	post	4.10	2.41		3.21	1.90		
40	pre	0.14	0.23	---	0.30	0.73	---	---
	post	0.24	0.27					
41	pre	0.99	1.37	---	1.89	1.57	---	---
	post	1.54	1.38		1.08	1.22		
42	pre	4.70	4.56	---	2.27	1.43	---	---
	post	3.33	2.78		1.82	1.45		
5	pre	24.15	12.81	---	29.58	9.48	---	---
	post	28.07	16.98		30.93	14.39		
6	pre	0.05	0.15	---	0.00	0.00	---	---
	post	0.05	0.15		0.03	0.13		
7	pre	0.05	0.17	---	0.03	0.13	---	---
	post	0.27	0.34		0.11	0.22		
8	pre	3.88	5.84	---	3.82	1.54	---	---
	post	1.92	5.27		3.53	1.74		
81	pre	2.14	1.98	---	3.49	1.67	---	---
	post	3.38	4.98		3.53	1.74		
82	pre	1.54	1.99	---	0.33	0.88	---	---
	post	2.58	2.36		0.00	0.00		
9	pre	57.15	12.28	---	54.13	9.18	---	---
	post	54.98	20.21		51.31	14.12		
91	pre	33.81	10.02	---	38.17	15.95	---	---
	post	28.48	10.81		40.27	12.05		
92	pre	24.14	17.54	---	15.98	19.34	---	---
	post	28.48	11.78		11.04	10.80		
10	pre	3.27	1.27	---	2.49	1.51	---	---
	post	3.43	2.12		3.18	2.29		
101	pre	1.18	0.87	---	1.23	0.88	---	---
	post	1.38	0.75		1.51	1.42		
102	pre	2.00	1.17	---	1.27	1.48	---	---
	post	2.12	1.87		1.85	1.79		

Two-tailed test.

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Table 1.3 : Comparison of Change Rates Between Pretest and Posttest I of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=11) $\bar{X}$	s	W-Test p<	Comparison Group (n=14) $\bar{X}$	s	W-Test p<	U-Test: Comparison of Change Rates p<	ES: Experimental vs. Comparison Group (posttests)
PTR [1]	pre	0.61	0.12	---	0.58	0.10	---	—	0.40
	post	0.61	0.16		0.55	0.14			
IDR [1]	pre	0.30	0.18	---	0.19	0.12	---	0.05	-0.43
	post	0.18	0.15		0.24	0.13			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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Table 1.4 : Comparison of Change Rates Between Posttest I and Posttest II of the Experimental (n=11) and Comparison (n=14) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	U-Test p≤	Comparison Group $\bar{x}$ (%)	s	U-Test p≤	U-Test: Comparison of Change Rates p≤
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post	0.00	0.00		0.00	0.00		
2	pre	0.22	0.40	---	0.00	1.27	0.05	0.05
	post	0.53	0.71		0.05	0.20		
3	pre	2.46	2.83	0.05	6.81	4.05	---	---
	post	0.00	5.22		7.10	4.86		
31	pre	1.96	1.75	0.00	4.78	3.55	---	---
	post	5.15	4.35		6.15	4.05		
32	pre	0.56	1.48	---	1.83	1.42	---	0.02
	post	1.73	1.78		1.05	1.34		
4	pre	4.10	2.41	0.05	3.21	1.96	---	---
	post	7.67	4.83		3.81	2.81		
40	pre	0.24	0.27	---	[illegible]33	0.42	---	---
	post	0.39	0.40		0.10	0.39		
41	pre	1.54	1.38	---	1.06	1.22	---	---
	post	2.48	5.08		1.32	2.19		
42	pre	2.33	2.78	---	1.81	1.65	---	---
	post	4.78	3.86		2.39	2.05		
5	pre	28.07	18.98	---	30.93	14.39	---	---
	post	23.02	7.87		30.29	18.43		
6	pre	0.05	0.15	---	0.03	0.13	---	---
	post	0.05	0.15		0.00	0.00		
7	pre	0.27	0.34	---	0.11	0.22	---	---
	post	0.05	0.15		0.00	0.00		
8	pre	5.94	5.27	---	3.53	1.74	---	---
	post	2.40	2.78		2.52	1.43		
81	pre	3.38	4.98	---	3.53	1.74	---	---
	post	1.88	2.78		2.52	1.43		
82	pre	2.58	2.38	0.05	0.00	0.00	---	0.02
	post	0.74	1.04		0.00	0.00		
9	pre	54.98	20.21	---	51.31	14.12	---	---
	post	55.56	8.09		52.80	15.13		
91	pre	28.48	10.81	---	40.27	12.05	---	---
	post	33.09	7.98		41.019	12.43		
92	pre	26.49	11.78	---	11.04	10.60	---	---
	post	21.87	9.08		11.58	18.58		
10	pre	3.43	2.12	---	3.18	2.29	---	---
	post	3.33	1.94		2.80	1.71		
101	pre	1.03	0.75	---	1.51	1.42	---	---
	post	1.93	1.76		1.35	0.99		
102	pre	2.12	1.87	---	1.65	1.79	---	---
	post	1.40	0.88		1.83	1.31		

Two-tailed test.

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Table 1.5 : Comparison of Change Rates Between Posttest I and Posttest II of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=11) $\bar{X}$	s	W-Test p[4]	Comparison Group (n=14) $\bar{X}$	s	W-Test p[4]	U-Test: Comparison of Change Rates p[4]	ES: Experimental vs. Comparison Group (posttests)
PTR [1]	post 1	0.61	0.18	---	0.55	0.14	---	---	0.24
	post 2	0.58	0.09		0.55	0.15			
IDR [1]	post 1	0.18	0.15	---	0.24	0.13	---	---	0.39
	post 2	0.33	0.18		0.28	0.18			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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Table 1.8 : Comparison of Change Rates Between Pretest and Posttest II of the Experimental (n=11) and Comparison (n=14) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group			Comparison Group			U-Test: Comparison of Change Rates
		$\bar{x}$ (%)	s	U-Test p≤	$\bar{x}$ (%)	s	U-Test p≤	p≤
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post	0.00	0.00		0.00	0.00		
2	pre	0.87	0.72	---	0.30	0.65	---	---
	post	0.53	0.71		0.05	0.20		
3	pre	4.45	3.54	---	4.00	3.57	---	---
	post	6.88	5.22		7.19	4.88		
31	pre	1.94	2.33	---	4.15	3.53	---	---
	post	3.15	4.36		6.15	4.95		
32	pre	1.52	1.87	---	0.85	0.88	---	---
	post	1.73	1.78		1.05	1.34		
4	pre	4.83	4.18	---	4.28	2.48	---	---
	post	7.67	4.38		3.81	2.81		
40	pre	0.14	0.23	---	0.30	0.73	---	---
	post	0.39	0.40		0.10	0.39		
41	pre	0.99	1.37	---	1.89	1.57	---	---
	post	2.48	5.08		1.32	2.19		
42	pre	4.70	4.56	---	2.27	1.44	---	---
	post	4.79	3.88		2.39	2.05		
5	pre	24.15	12.81	---	29.58	9.48	---	---
	post	23.02	7.67		30.29	18.43		
6	pre	0.05	0.15	---	0.00	0.00	---	---
	post	0.05	0.15		0.00	0.00		
7	pre	0.05	0.05	---	0.03	0.13	---	---
	post	0.17	0.15		0.00	0.00		
8	pre	3.68	1.92	---	3.82	1.54	---	---
	post	2.40	2.70		2.52	1.43		
81	pre	2.14	1.98	---	3.48	1.47	---	---
	post	1.66	2.76		2.52	1.43		
82	pre	1.54	1.19	---	0.33	0.66	---	---
	post	0.74	1.04		0.00	0.00		
9	pre	57.15	12.28	---	54.13	9.18	---	---
	post	55.56	8.09		52.60	15.13		
91	pre	33.01	10.02	---	38.17	15.95	---	---
	post	33.69	7.99		41.02	12.43		
92	pre	24.14	17.54	---	15.98	19.34	---	---
	post	21.87	9.08		11.58	16.59		
10	pre	3.27	1.27	---	2.48	1.51	---	---
	post	3.33	1.94		2.98	1.71		
101	pre	1.77	0.87	---	1.23	0.68	---	---
	post	1.93	1.78		1.35	0.99		
102	pre	2.08	1.17	0.05	1.27	1.48	---	---
	post	1.40	0.88		1.83	1.31		

Two-tailed test.

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Table 1.7 : Comparison of Change Rates Between Pretest and Posttest II of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=11) $\bar{X}$	s	W-Test p<	Comparison Group (n=14) $\bar{X}$	s	W-Test p<	U-Test: Comparison of Change Rates p<	ES: Experimental vs. Comparison Group (posttests)
PTR (1)	pre	0.61	0.12	---	0.58	0.10	---	---	0.24
	post	0.58	0.09		0.55	0.15			
ICR_2 (1)	pre	0.30	0.18	---	0.19	0.12	---	---	0.39
	post	0.33	0.18		0.26	0.18			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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Table 1.8 : Summary of Significant ($p<0.05$) Results for Study 1

a) Pre-Posttest Changes

	Experimental Group	Comparison Group
Changes from Pretest to Posttest I (Wilcoxon Test)	Significant ($p<0.05$) decrease in category 2 (praise).	Significant ($p<0.01$) increase in category 32 (using student ideas)
Changes from Posttest I to Posttest II (Wilcoxon Test)	Significant ($p<0.05$) increase in cat. 3 (accepting and using students' ideas) and cat. 31 (accepting ideas) and cat. 4 (questioning). Significant ($p<0.05$) decrease in cat. 82).	Significant ($p<0.05$) decrease in cat. 2 (praise)
Changes from Pretest to Posttest II (Wilcoxon Test)	Significant decrease in cat. 102	---

b) Change Rate Differences Between Experimental and Comparison Group.

Pretest - Posttest I :	Category 3	($p<0.05$)	The comparison group had stronger changes than the experimental group in the desired direction
	Category 31	($p<0.05$)	
	IDR	($p<0.05$)	
Posttest I - Posttest II :	Category 2	($p<0.05$)	The "experimental" group (without treatment between posttest I and posttest II had stronger changes than the comparison group.
	Category 32	($p<0.02$)	
	Category 82	($p<0.02$)	
Pretest - Posttest II :	------		

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The results reveal that there are very few changes from pre- to posttest I and from posttest I to posttest II, both in the experimental and the comparison groups (1). The only changes obtained occurred where there had been no self-confrontation (2). From pre- to posttest I the comparison group significantly increased the frequency of the category 32 behavior (using discussion member's ideas). And the experimental group significantly increased behaviors in categories 3 and 31 (accepting and using discussion member's ideas) from posttest I to posttest II, as well as the category 4 behaviors (asking questions).

Interestingly, in both groups the frequency of praise (category 2) dropped after the self-confrontation. This can be seen as the only positive effect of the treatment. In peer group discussions praise seems to be seen as an unappropriate control mechanism (Brophy 1981; Klinzing and Bar-On, 1975). Also, no significant changes were obtained from pre- to posttest II: gains and losses due to the "non-treatment" were balanced out.

The comparison of change rates between the experimental and comparison groups confirm the conclusions from the results of the pretest-posttest I and posttest I-posttest II changes. The effect sizes for the two Flanders ratios, Pupil Talk Ratio (PTR) and Indirect/Direct Ratio (IDR), representing the main goals of the treatment, consistently show a small increase in the discussion member talk (ES = 0.24 - 0.40).

But for the IDR the effect sizes again show a slight superiority of the groups without self-confrontation.

In summary, self-confrontation via TV did not have the expected effect.

---

(1) There were no significant differences between the experimental and comparison groups in the pretests for all variables assessed.

(2) With one exception: change in cat. 82 from posttest I to posttest II.

3.2. Study 2:

Effects of Self-Confrontation via TV plus Focus Provided by Group Discussion vs. Self-Confrontation via TV without Group Discussion

3.2.1. Participants of the Study

23 university students from various subject matter areas (semesters studied at the university $\bar{x}$ = 4.7; 6 male, 16 female) volunteered for the study. They were randomly assigned to experimental and a comparison groups (comparison group: n = 10; experimental group: n = 12). Due to organizational problems, one participant had to drop out of the comparison group.

3.2.2 Design and Treatment

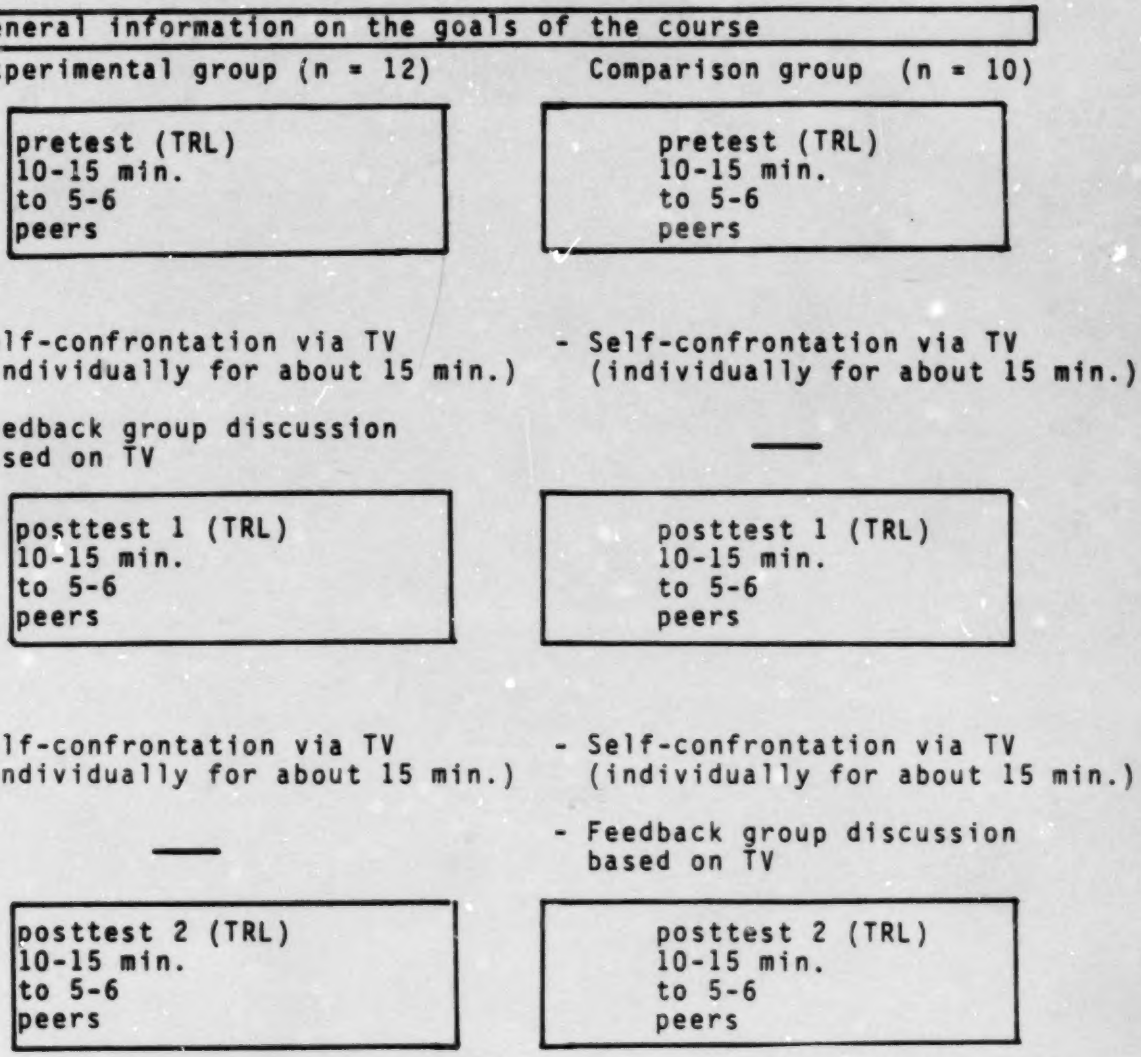
The design, treatment, and training goals of study 2 were identical with those of study 1, except that both the experimental and the comparison groups had one peer group feedback discussion of their lessons based on the video recording of the lessons. The experimental group received feedback after pretest and self-confrontation, the comparison group after posttest 1 and self-confrontation, about 30 minutes for each test lesson (teach). This discussion focused on behaviors appropriate for Teacher Response Lessons, following the feedback rules of W. Zifreund (1966, 1968).

Figure 2 summarizes design and treatment.

Figure 2:

Design and Treatment of Study 2

Pretest - posttest - comparison group design


General information on the goals of the course
Experimental group (n = 12)
Comparison group (n = 10)
pretest (TRL) 10-15 min. to 5-6 peers
pretest (TRL) 10-15 min. to 5-6 peers
- Self-confrontation via TV (individually for about 15 min.)
- Feedback group discussion based on TV
- Self-confrontation via TV (individually for about 15 min.)
posttest 1 (TRL) 10-15 min. to 5-6 peers
posttest 1 (TRL) 10-15 min. to 5-6 peers
- Self-confrontation via TV (individually for about 15 min.)
- Self-confrontation via TV (individually for about 15 min.)
- Feedback group discussion based on TV
posttest 2 (TRL) 10-15 min. to 5-6 peers
posttest 2 (TRL) 10-15 min. to 5-6 peers

3.2.3 Data Source

Studies 1 and 2 were evaluated jointly. For data source and observer agreement, see study 1.

3.2.4. Results

Tables 2.1. - 2.7. summarize the results.

Table 2.1 : Comparison of Change Rates Betwe : Pretest and Posttest I of the Experimental (n=12) and Comparison (n=10) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group			Comparison Group			U-Test: Comparison of Change Rates
		$\bar{I}$ (%)	s	U-Test p*	$\bar{I}$ (%)	s	U-Test p*	p*
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post	0.00	0.00		0.00	0.00		
2	pre	0.33	0.49	---	0.35	0.42	---	---
	post	0.45	0.94		0.35	0.41		
3	pre	3.11	3.32	---	3.10	3.13	---	---
	post	5.76	4.57		4.76	2.70		
31	pre	2.79	3.02	---	2.57	2.87	---	---
	post	3.99	2.46		3.70	2.35		
32	pre	0.33	0.49	0.05	0.52	0.56	---	---
	post	1.77	2.05		1.08	1.38		
4	pre	3.11	2.80	---	6.77	5.07	---	0.05
	post	4.52	3.64		2.97	2.10		
40	pre	0.04	0.14	---	0.26	0.28	---	---
	post	0.12	0.22		0.16	0.26		
41	pre	1.84	2.13	---	2.82	2.06	---	---
	post	2.43	2.54		1.71	2.04		
42	pre	1.44	1.12	---	3.69	3.78	---	---
	post	1.96	1.85		1.19	1.67		
5	pre	30.52	20.30	---	25.72	8.98	---	---
	post	34.35	19.27		25.42	10.51		
6	pre	0.08	0.19	---	0.00	0.00	---	---
	post	0.16	0.32		0.00	0.00		
7	pre	0.00	0.19	---	0.10	0.21	---	---
	post	0.21	0.27		0.05	0.16		
8	pre	5.21	3.91	---	4.59	2.70	---	---
	post	4.87	3.48		3.88	3.89		
81	pre	2.05	1.80	---	3.49	2.53	---	---
	post	2.53	2.83		3.22	3.47		
82	pre	3.16	3.02	---	1.10	2.62	---	---
	post	2.34	2.08		0.64	2.02		
9	pre	53.03	17.36	---	55.20	13.88	---	---
	post	48.01	18.49		50.18	8.58		
91	pre	27.41	13.81	---	34.15	11.31	---	---
	post	30.95	15.85		39.74	13.94		
92	pre	25.62	18.58	0.05	21.01	19.84	---	---
	post	15.02	14.39		18.44	15.37		
10	pre	4.03	2.81	---	3.81	2.62	---	---
	post	3.15	1.58		3.99	1.58		
101	pre	2.36	3.03	---	1.73	0.82	---	---
	post	1.43	0.82		1.70	0.98		
102	pre	1.73	1.20	---	1.88	1.62	---	---
	post	1.72	1.25		2.19	1.71		

*two-tailed test.

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Table 2.2 : Comparison of Change Rates Between Pre- and Posttests I of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=12) $\bar{x}$	s	W-Test p[4]	Comparison Group (n=10) $\bar{x}$	s	W-Test p[4]	U-Test: Comparison of Change Rates p[4]	ES: Experimental vs. Comparison Group (posttests)
PTR [1]	pre	0.58	0.19	0.05	0.80	0.14	---	---	-0.78
	post 1	0.51	0.17		0.62	0.10			
IDR [1]	pre	0.16	0.14	---	0.18	0.10	---	---	0.00
	post 1	0.20	0.13		0.20	0.11			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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Table 2.3 : Comparison of Change Rates Between Posttest I and Posttest II of the Experimental (n=12) and Comparison (n=10) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group			Comparison Group			U-Test: Comparison of Change Rates
		x̄ (%)	s	U-Test p≤	x̄ (%)	s	U-Test p≤	p≤
1	post 1	0.00	0.00	---	0.00	0.00	---	---
	post 2	0.04	0.14		0.00	0.00		
2	post 1	0.45	0.54	---	0.35	0.41	---	---
	post 2	0.88	0.86		0.28	0.28		
3	post 1	5.76	4.57	---	4.78	2.70	---	---
	post 2	8.87	5.44		5.31	3.49		
31	post 1	3.99	2.48	0.01	3.70	2.35	---	---
	post 2	7.70	3.82		4.90	3.38		
32	post 1	1.77	2.85	---	1.08	1.38	---	---
	post 2	1.27	2.76		0.41	0.42		
4	post 1	4.52	3.84	---	2.97	2.10	---	---
	post 2	6.59	2.74		2.84	1.38		
40	post 1	0.12	0.22	---	0.18	0.28	---	---
	post 2	0.08	0.19		0.00	0.00		
41	post 1	2.43	2.54	---	1.71	2.04	---	---
	post 2	2.48	1.74		0.93	1.45		
42	post 1	1.96	1.85	0.02	1.11	1.87	---	---
	post 2	4.03	1.68		1.91	1.50		
5	post 1	34.35	19.27	0.05	25.42	10.51	---	---
	post 2	20.93	4.92		28.21	13.91		
6	post 1	0.16	0.32	---	0.00	0.00	---	---
	post 2	0.04	0.14		0.00	0.00		
7	post 1	0.21	0.27	---	0.05	0.16	---	---
	post 2	0.08	0.19		0.15	0.25		
8	post 1	4.87	3.48	---	3.86	3.89	---	---
	post 2	3.92	2.02		3.01	2.14		
81	post 1	2.53	2.83	---	3.22	3.47	---	---
	post 2	2.71	1.77		2.14	2.08		
82	post 1	2.34	2.06	---	0.64	2.02	---	---
	post 2	1.21	1.18		0.88	1.87		
9	post 1	48.01	16.49	---	58.18	8.58	---	---
	post 2	54.88	7.18		58.44	14.20		
91	post 1	30.95	15.85	---	39.74	13.94	---	---
	post 2	38.83	11.05		36.01	14.80		
92	post 1	15.07	14.38	---	18.44	15.37	---	---
	post 2	16.05	11.21		22.44	18.55		
10	post 1	3.15	1.58	---	3.88	1.58	---	---
	post 2	3.57	2.23		3.28	1.96		
101	post 1	1.43	0.82	---	1.70	0.98	---	---
	post 2	2.08	1.23		2.05	1.72		
102	post 1	1.72	1.25	---	2.19	1.71	---	---
	post 2	1.48	1.51		1.21	1.33		

Two-tailed test.

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Table 2.4 : Comparison of Change Rates Between Posttest I and Posttest II of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=12) $\bar{X}$	s	W-Test p[4]	Comparison Group (n=10) $\bar{X}$	s	W-Test p[4]	U-Test: Comparison of Change Rates p[4]	ES: Experimental vs. Comparison Group (posttests)
PTR (1)	post 1	0.51	0.17	---	0.62	0.10	---	---	-0.17
	post 2	0.59	0.08		0.61	0.15			
IOR (1)	post 1	0.20	0.13	0.01	0.20	0.11	---	---	1.13
	post 2	0.36	0.12		0.23	0.11			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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of the Experimental (n=12) and Comparison (n=10) Groups. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group			Comparison Group			U-Test: Comparison of Change Rates
		$\bar{x}$ (%)	s	U-Test p*	$\bar{x}$ (%)	s	U-Test p*	p*
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post 2	0.04	0.14		0.00	0.00		
2	pre	0.33	0.49	---	0.35	0.42	---	---
	post 2	0.08	0.08		0.28	0.28		
3	pre	3.11	3.32	0.02	3.10	3.13	---	---
	post 2	8.97	5.44		5.31	3.49		
31	pre	2.78	3.02	0.02	2.57	2.87	---	---
	post 2	7.70	3.82		4.90	3.38		
32	pre	0.33	0.48	---	0.52	0.56	---	---
	post 2	1.27	2.76		0.41	0.42		
4	pre	3.11	2.90	0.01	8.77	5.07	0.02	0.02
	post 2	8.59	2.74		2.84	1.38		
40	pre	0.04	0.14	---	0.28	0.28	---	0.05
	post 2	0.08	0.19		0.00	0.00		
41	pre	1.84	2.13	---	2.82	2.08	0.05	0.02
	post 2	2.48	1.74		0.93	1.45		
42	pre	1.44	1.12	0.01	3.89	3.78	---	0.02
	post 2	4.03	1.88		1.91	1.50		
5	pre	30.52	20.30	---	25.72	8.98	---	---
	post 2	20.93	4.92		26.21	13.91		
6	pre	0.08	0.18	---	0.00	0.00	---	---
	post 2	0.04	0.14		0.00	0.00		
7	pre	0.08	0.18	---	0.10	0.21	---	---
	post 2	0.08	0.18		0.15	0.25		
8	pre	5.21	3.91	---	4.59	2.70	---	---
	post 2	3.82	2.02		3.01	2.14		
81	pre	2.05	1.80	---	3.49	2.53	---	---
	post 2	2.71	1.77		2.14	2.08		
82	pre	3.10	3.02		1.10	2.62	---	---
	post 2	1.21	1.18		0.88	1.87		
9	pre	53.03	17.34	---	55.20	13.88	---	---
	post 2	54.88	7.16		58.44	14.20		
91	pre	27.41	13.81	0.02	34.15	11.31	---	---
	post 2	38.83	11.85		36.01	14.80		
92	pre	25.62	18.50	---	21.01	19.84	---	---
	post 2	16.05	11.21		22.44	18.55		
10	pre	4.03	2.61	---	3.81	2.02	---	---
	post 2	3.57	2.23		3.26	1.96		
101	pre	2.30	3.03	---	1.73	0.82	---	---
	post 2	2.09	1.23		2.05	1.72		
102	pre	1.73	1.20	---	1.88	1.62	---	---
	post 2	1.48	1.51		1.21	1.33		

*Two-tailed test.

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Table 2.6 : Comparison of Change Rates Between Pretests and Posttests II of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group (n=12)			Comparison Group (n=10)			U-Test: Comparison of Change Rates p ≤	ES: Experimental vs. Comparison Group (posttests)
		$\bar{X}$	s	W-Test p≤	$\bar{X}$	s	W-Test p≤		
PTR (1)	pre	0.58	0.19	---	0.60	0.14	---	---	-0.17
	post 2	0.59	0.08		0.61	0.15			
IDR (1)	pre	0.16	0.14	0.01	0.18	0.10	---	0.05	1.13
	post 2	0.36	0.12		0.23	0.11			

Two-tailed test.

1) For definitions of the ratios, see Table 1.1

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Table 2.7 : Summary of Significant ($p<0.05$) Results for Study 2

a) Pre-Posttest Changes

	Experimental Group	Comparison Group
Changes from Pretest to Posttest I (Wilcoxon Test)	Cat. 32 (increase) ($p<0.05$) Cat. 92 (decrease) ($p<0.05$) PTR (decrease) ($p<0.05$)	------
Changes from Posttest I to Posttest II (Wilcoxon Test)	Cat. 31 (increase) ($p<0.01$) Cat. 42 (increase) ($p<0.02$) Cat. 5 (decrease) ($p<0.05$) IDR (increase) ($p<0.01$)	------
Changes from Pretest to Posttest II (Wilcoxon Test)	Cat. 3 (increase) ($p<0.02$) Cat. 31 (increase) ($p<0.02$) Cat. 4 (increase) ($p<0.01$) Cat. 42 (increase) ($p<0.01$) Cat. 91 (increase) ($p<0.02$) IDR (increase) ($p<0.01$)	Cat. 4 (increase) ($p<0.02$) Cat. 41 (decrease) ($p<0.05$)

b) Change Rate Differences Between Experimental and Comparison Group (Mann-Whitney-U-Test)

Pretest - Posttest I :	Category 4 ($p<0.05$)	
Posttest I - Posttest II :	-----	
Pretest - Posttest II :	Category 4 ($p<0.02$)	The experimental group outperformed the comparison group.
	Category 40 ($p<0.02$)	
	Category 42 ($p<0.02$)	
	IDR ($p<0.05$)	
	Category 41 ($p<0.05$)	The comparison group outperformed the experimental group.

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As the result in Tables 2.1 - 2.7 show, except for a slight (but significant) increase in category 32 behaviors (using of discussion group members' ideas by discussion leader), there are significant post treatment changes in the undesired direction: in category 92 (discussion group members' talk to another peer) and generally in the amount of discussion group members' talk, while there is no significant change in the comparison group (1). The comparison of the change rates shows a significant difference in behaviors of category 4 (questioning). The experimental group increased slightly in these behaviors while the amount of questions asked by the comparison group decreased.

Interestingly, the experimental group showed significant changes from posttest I to posttest II in the behaviors of categories 3 (accepting and using ideas), 31 (accepting ideas), 5 (lecturing), and in the main goal of the treatment: the IDR. Thus, for this group significant changes in the desired direction from pretest to posttest were obtained in behaviors of categories 3, 31, 4, 42 (broad questions), 91 (discussion group member talks to the moderator initiatively), and in the Indirect/Direct Ratio (IDR). The comparison group showed desired changes, only in behaviors of categories 4 and 41 (narrow questions). While there were no significant results concerning the comparison of change rates from posttest I to posttest II, the experimental group from pretest to posttest II significantly outperformed the comparison group in behaviors of categories 4, 40, 42. Only in the reduction of narrow questions (cat. 41) did the comparison group outperform the experimental group.

---

(1) No significant differences were obtained in the pretest of the experimental and comparison groups. Except for cat. 82 ($p < 0.02$): The experimental group used more behaviors of this category.

The effect sizes show that the comparison group showed slightly more discussion participant's talk, no difference in the IDR at the time of the posttest I, and a considerable difference in posttest II (ES = 1.13).

Obviously, the sequence of the treatments made an effect. Perhaps some time is needed to integrate the insights gained in the group discussion before they have a visible effect on the discussion behavior.

3.3. Study 3:

Effects of Self-confrontation via TV versus Self-confrontation plus Focus Provided by Discrimination Training (Interaction Analysis Training)

3.3.1. Participants of the Study

23 university students (becoming secondary school teachers; $\bar{x}$ = 5,5 semesters studied at the university; various combinations of subject matter areas; $\bar{x}$ = 23-24 years old) volunteered for the study. They were randomly assigned to the experimental and the comparison group.
Experimental group: n = 12 ($\bar{x}$ = 5,8 semesters, 23,7 years old)
Comparison group: n = 10 ($\bar{x}$ = 5,1 semesters, 23,3 years old).
One participant dropped out of the control group because of organizational (technical) problems.

3.3.2. Design and Treatment

After a one-hour presentation of general information on the course goals and organization, both groups took two pretests each. In pretest 1 the emphasis of the trainees was to impart knowledge (Teacher Initiation Lesson, TIL). And in pretest 2 the same topic was discussed in the group where the trainee's goal was mainly to initiate verbal participation of the peers and to react to them constructively (Teacher Response Lesson, TRL, see study 1).
The topics of the lessons were chosen by the participants individually. The participants were asked to choose the topics according to the interests and academic level of their peers and to choose a similar topic for all pre- and postests.
After both groups watched self-confrontation via TV (see study 1), the experimental group received 10 hours of training in coding behavior with the 10 categories of the Flanders Interaction Category System (FIAC). They worked through a programmed self-instructional training package consisting of a handbook and audiotapes (FWLERD, 1972). They were also introduced to the interpretation of FIAC data based on the timeline display, the 10 x 10 matrix, and the FIAC ratios (lecture). The control group received no treatment at this stage.

Both groups then took the two posttests each (posttest 1 and 2) followed by self-confrontation (see study 1).

The comparison group, now, received the same FIAC training previously given to the experimental group while the experimental group received no treatment. Two final post tests (posttest 1, II and 2, II) were then taken by the comparison group.

Figure 3 summarizes design and treatment of study 3.

Figure 3: Design and Treatment of Study 3

Pretest-posttest-control group design

A pretest-posttest-control group design was used in this study.

General information of the goals and organization of the course (1 hr.)	
Treatment group (n = 12)	Control group (n = 10)
pretest 1 (TIL) 10-15 min. 5-6 peers; pretest 2 (TRL) 10-15 min. 5-6 peers	pretest 1 (TIL) 10-15 min. 5-6 peers; pretest 2 (TRL) 10-15 min. 5-6 peers
Self-confrontation via TV (15 min. individually)	Self-confrontation via TV (15 min. individually)
Learning the 10 categories of Flanders' Interaction Category System and training in coding behavior (programmed material). Introduction to the interpretation of FIAC data based on the time-line display, the 10 x 10 matrix, and Flanders ratios (1 1/2 days, 10 hours)	— - -
posttest 1 (TIL) 10-15 min. 5-6 peers; posttest 2 (TRL) 10-15 min. 5-6 peers	posttest 1 (TIL) 10-15 min. 5-6 peers; posttest 2 (TRL) 10-15 min. 5-6 peers
Self-confrontation via TV (15 min. individually)	Self-confrontation via TV (15 min. individually)
— - —	treatment as for the experimental group
——— ———	posttest 1, II II (TIL); posttest 2, II (TRL)

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3.3.3. Data Source

Two trained observers coded the first 10 minutes of each pre- and posttest with the FIAC System. The tapes were randomly assigned to them.

Their agreement with a standard observer was π = 0.85 (observer 1) and π = 0.87 (Scott-coefficient, modified by Flanders (1967); their agreement with each other was π = 0.89. Results were obtained by Wilcoxon tests (pre-post comparisons), Mann and Whitney - U-tests (comparison of change rates from pre- to posttests between experimental and comparison), and effect sizes for two Flanders ratios.

The 10 basic categories of the Flanders system are shown in Table 3.1.

Table 3. 1. : **Flanders' Interaction Analysis Categories* (FIAC)**

Teacher Talk	Response	1. Accepts feeling. Accepts and clarifies an attitude or the feeling tone of a student in a nonthreatening manner. Feelings may be positive or negative. Predicting and recalling feelings are included. 2. Praises or encourages. Praises or encourages students; says "um hum" or "go on"; makes jokes that release tension, but not at the expense of a student. 3. Accepts or uses ideas of students. Acknowledges student talk. Clarifies, builds on, or asks questions based on student ideas.
		4. Asks questions. Asks questions about content or procedure, based on teacher ideas, with the intent that a student will answer.
	Initiation	5. Lectures. Offers facts or opinions about content or procedures; expresses his own ideas, gives his own explanation, or cites an authority other than a student. 6. Gives directions. Gives directions, commands, or orders to which a student is expected to comply. 7. Criticizes student or justifies authority. Makes statements intended to change student behavior from nonacceptable to acceptable patterns; corrects student answers; bawls someone out. Or, states why the teacher is doing what he is doing; uses extreme self-reference.
Student Talk	Response	8. Student talk--response. Student talk in response to teacher contact which structures or limits the situation. Freedom to express own ideas is limited.
	Initiation	9. Student talk--initiation. Students initiate or express own ideas either spontaneously or in response to teacher's soliciting initiation. Freedom to develop opinions and a line of thought; going beyond existing structure.
Silence		10. Silence or confusion. Pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

* There is no scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate, not to judge a position on a scale. Based on Ned A. Flanders, Analyzing Teaching Behavior, 1970.

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3.3.4. Results

Tables 3.2 - 3.5 summarize the results.

Table 3.2 : Comparison of Change Rates Between Pretest 1 and Posttest 1 (Teacher Initiation Lessons) of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests for the 9 Basic Categories of the FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p<	Comparison Group $\bar{x}$ (%)	s	W-Test p<	U-Test: Comparison of Change Rates p<
1	pre 1	0.00	0.00	---	0.00	0.00	---	---
	post 1	0.00	0.00		0.00	0.00		
2	pre 1	0.04	0.15	0.05	0.05	0.16	---	---
	post 1	0.48	0.53		0.25	.53		
3	pre 1	0.69	1.04	0.02	2.08	2.68	0.02	---
	post 1	5.86	0.48		5.34	3.04		
4	pre 1	0.30	0.61	0.02	1.66	4.21	---	---
	post 1	2.91	3.60		2.16	2.41		
5	pre 1	90.24	8.80	0.05	87.02	11.35	0.02	---
	post 1	76.03	20.93		76.63	14.61		
6	pre 1	0.00	0.00	—	0.00	0.00	---	---
	post 1	0.29	0.39		0.00	0.00		
7	pre 1	0.04	0.14	---	0.00	0.00	---	---
	post 1	0.04	0.14		0.20	0.34		
8	pre 1	0.08	0.19	0.02	0.45	1.42	0.05	---
	post 1	3.76	4.10		2.92	4.49		
9	pre 1	4.22	6.32	---	2.26	3.79	0.05	---
	post 1	5.96	8.39		7.74	7.83		

Two-tailed test.

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Table 3.3 : Comparison of Change Rates Between Pretest 2 and Posttest 2 (Teacher Response Lessons) of the Experimental and Comparison Groups. Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests for the 9 Basic Categories of the FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p≤	Comparison Group $\bar{x}$ (%)	s	W-Test p≤	U-Test: Comparison of Change Rates p≤
1	pre 2	0.00	0.00	---	0.00	0.00	---	---
	post 2	0.00	0.00		0.00	0.00		
2	pre 2	0.46	0.69	---	0.32	0.46	---	---
	post 2	0.71	0.75		0.20	0.42		
3	pre 2	7.90	5.63	---	7.29	3.70	---	---
	post 2	10.15	6.52		7.17	3.37		
4	pre 2	9.19	6.66	---	6.49	4.45	---	---
	post 2	7.91	5.41		4.03	3.07		
5	pre 2	27.24	18.69	---	26.94	17.64	0.10	---
	post 2	29.37	18.37		19.61	10.98		
6	pre 2	0.09	0.20	0.10	0.24	0.41	---	---
	post 2	0.08	0.19		0.09	0.29		
7	pre 2	0.13	0.43	---	0.06	0.19	---	---
	post 2	0.08	0.28		0.00	0.00		
8	pre 2	2.31	4.31	0.10	7.54	5.38	0.02	0.02
	post 2	5.02	3.35		0.52	1.02		
9	pre 2	48.03	23.42	0.05	42.57	15.10	0.02	0.02
	post 2	37.80	16.88		59.29	11.70		

Two-tailed test.

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Table 3.4 : Comparison of Change Rates Between Pretest and Posttest 1 (Teacher Initiation Lesson) of the Experimental and Comparison Groups (n=12/10). Means, Standard Deviations, Wilcoxon-, Mann-Whitney -U-Tests for Two Flanders Ratios.

Ratio	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p[a]	Comparison Group $\bar{x}$ (%)	s	W-Test p[a]	U-Test: Comparison of Change Rates p[a]	ES: Experimental vs. Comparison Group (posttests)
PTR	pre 1	0.04	0.08	0.05	0.03	0.04	0.02	---	-0.10
	post 1	0.10	0.11		0.11	0.09			
IDR	pre 1	0.01	0.02	0.02	0.04	0.08	0.02	0.02	0.21
	post 1	0.12	0.11		0.10	0.07			

[a] Two-tailed test.

Table 3.5 : Comparison of Change Rates Between Pretest 2 and Posttest 2 (Teacher Response Lesson) of the Experimental and Comparison Groups (n=12/10). Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests for Two Flanders Ratios.

Ratio	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p[a]	Comparison Group $\bar{x}$ (%)	s	W-Test p[a]	U-Test: Comparison of Change Rates p[a]	ES: Experimental vs. Comparison Group (posttests)
PTR	pre 2	0.50	0.20	---	0.50	0.15	0.02	0.02	-1.14
	post 2	0.43	0.17		0.60	0.12			
IDR	pre 2	0.41	0.18	---	0.38	0.21	---	---	0.22
	post 2	0.42	0.13		0.39	0.15			

[a] Two-tailed test.

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The results for the Teacher Initiation Lesson (TIL) show both in the experimental and the comparison groups significant changes from pretest 1 to posttest 1 desirable according to FIAC system: in categories 3, 5, and the ratios PTR and IDR. In both groups there was also a significant change in category 8. In addition, the experimental group made changes in the categories 2 and 4; changes in category 9 could be observed only in the comparison group. The comparison of the change rates of the experimental and the comparison groups shows no significant results.

In the Teacher Response Lesson (TRL) changes in the desired direction could be observed only in the comparison group: There are significant increases in categories 8 and 9 and the PTR (Pupil Talk Ratio). The comparison of the change rates of the experimental and the comparison groups shows significant results for categories 8, 9, and the PTR, favoring the comparison group. Thus, the effect sizes for the PTR show no difference in the TIL but a strong minus ES for the TRL. Only a low ES was obtained in both posttests for the IDR.
These results are puzzling: both, the experimental and the comparison groups show similar changes in discussion moderators behavior, but the comparison group outperformed the experimental group in discussion members behaviors.

As mentioned above, the comparison group after its posttest got the same training (FIAC training) as the experimental group. After their IA-training they conducted another two posttests (posttest 1,II and 2,II), so that in comparison to the experimental group they had two additional Microteaching trials with TV feedback.

Tables 3.6 - 3.9 show the comparisons of the pre- and post-tests 1 and 2 of the experimental group with the pre- and posttests 1,II and 2,II of the comparison group, both for the Teacher Initiation Lesson (TIL) and the Teacher Response Lesson (TRL).

Table 3.6 : Comparison of Change Rates Between Pretest 1 and Posttest 1 (Teacher Initiation Lesson) of the Experimental Group and Pretest 1 and Posttest 1 II of the Comparison Group. Means, Standard Deviations, Wilcoxon-, and Mann-Whitney-U-Tests for the 9 Basic Categories of the FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p*	Test	Comparison Group $\bar{x}$ (%)	s	W-Test p*	U-Test: Comparison of Change Rates p*
1	pre 1	0.00	0.00	---	pre 1	0.00	0.00	---	---
	post I	0.00	0.00		post 1 II	0.00	0.00		
2	pre 1	0.04	0.15	0.05	pre 1	0.05	0.16	0.01	---
	post I	0.46	0.53		post 1 II	1.23	0.99		
3	pre 1	0.69	1.04	0.02	pre 1	2.08	2.66	0.01	0.05
	post I	5.86	5.93		post 1 II	12.90	4.90		
4	pre 1	0.30	0.61	0.02	pre 1	1.66	4.21	0.01	0.05
	post I	2.91	3.60		post 1 II	8.94	5.94		
5	pre 1	90.24	8.80	0.05	pre 1	87.02	11.35	0.01	0.02
	post I	76.03	20.93		post 1 II	47.89	10.45		
6	pre 1	0.00	0.00	---	pre 1	0.00	0.00	---	---
	post I	0.29	0.39		post 1 II	0.31	0.78		
7	pre 1	0.04	0.14	---	pre 1	0.00	0.00	---	---
	post I	0.04	0.14		post 1 II	0.17	0.28		
8	pre 1	0.08	0.19	0.02	pre 1	0.45	1.42	0.01	---
	post I	3.78	4.10		post 1 II	5.78	3.40		
9	pre 1	4.22	8.32	---	pre 1	2.26	3.79	0.02	0.10
	post I	5.98	8.39		post 1 II	10.58	8.36		

*Two-tailed test.

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Table 3.7 : Comparison of Change Rates Between Pretest 2 and Posttest 2 (Teacher Response Lesson) of the Experimental Group and Pretest 2 and Posttest 2 II of the Comparison Group. Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests for the 9 Basic Categories of the FIAC-System.

Cat.	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p*	Test	Comparison Group $\bar{x}$ (%)	s	W-Test p*	U-Test: Comparison of Change Rates p*
1	pre 2	0.00	0.00	---	pre 2	0.00	0.00	---	---
	post 2	0.00	0.00		post 2 II	0.23	0.72		
2	pre 2	0.46	0.69	---	pre 2	0.32	0.46	---	---
	post 2	0.71	0.75		post 2 II	0.42	0.60		
3	pre 2	7.90	5.63	---	pre 2	7.29	3.70	0.10	---
	post 2	10.15	6.52		post 2 II	11.39	5.64		
4	pre 2	9.19	6.66	---	pre 2	8.49	4.45	---	---
	post 2	7.91	5.41			5.52	3.37		
5	pre 2	27.24	18.69	---	pre 2	26.94	17.64	0.01	0.10
	post 2	29.37	16.37		post 2 II	16.87	12.69		
6	pre 2	0.08	0.20	---	pre 2	0.24	0.41	---	---
	post 2	0.08	0.19		post 2 II	0.00	0.00		
7	pre 2	0.13	0.43	---	pre 2	0.06	0.19	---	---
	post 2	0.08	0.28		post 2 II	0.14	0.22		
8	pre 2	2.31	4.31	---	pre 2	7.54	5.38	---	0.02
	post 2	5.02	3.35		post 2 II	3.27	5.04		
9	pre 2	48.03	23.42	0.05	pre 2	42.57	15.10	---	0.05
	post 2	37.80	16.88		post 2 II	48.68	13.54		

*Two-tailed test.

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Table 3.8 : Comparison of Change Rates Between Pretest 1 and Posttest 1 II (Teacher Initiation Lesson) of the Experimental and Posttest 1 II of the Comparison Group. Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p<	Test	Comparison Group $\bar{x}$ (%)	s	W-Test p<	U-Test: Comparison of Change Rates p<	ES:Experimental vs. Comparison Group (posttests)
PTR	pre 1 post 1	0.04 0.10	0.06 0.10	0.05	pre 1 post 1 II	0.03 0.16	0.04 0.08	0.02	0.10	-0.66
IDR	0.01	0.01 0.12	0.02 0.10	0.02	pre 1 post 1 II	0.04 0.33	0.08 0.10	0.02	0.02	-2.10

Two-tailed test.

Table 3.9 : Comparison of Change Rates Between Pretest 2 and Posttest 2 (Teacher Response Lesson) of the Experimental Group and Pretest 2 and Posttest 2 II of the Comparison Group. Means, Standard Deviations, Wilcoxon-, Mann-Whitney-U-Tests, and Effect Sizes (ES) for Two Flanders Ratios.

Ratio	Test	Experimental Group $\bar{x}$ (%)	s	W-Test p<	Test	Comparison Group $\bar{x}$ (%)	s	W-Test p<	U-Test: Comparison of Change Rates p<	ES:Experimental vs. Comparison Group (posttests)
PTR	pre 2 post 2	0.50 0.43	0.20 0.16	---	pre 2 post 2 II	0.50 0.52	0.15 0.11	---	---	-0.64
IDR	pre 2 post 2	0.41 0.42	0.18 0.12	---	pre 2 post 2 II	0.38 0.54	0.21 0.15	0.05	0.10	-0.89

Two-tailed test.

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As the results in tables 3.6 - 3.9 show, the addition of only two more occasions to practice led to an increase in the behavioral changes. In the Teacher Initiation Lesson, the comparison group significantly outperformed the experimental group in behaviors of categories 3, 4, and 5, and performed nearly significantly in category 9 as well as in the PTR and the IDR. In the Teacher Response Lesson, the comparison group had significantly stronger changes in categories 5 (nearly sign.), 8 (decrease), 9, and in the IDR.

So another study was conducted to determine whether practice and feedback (one Microteaching cycle only) would be more successful in changing behavior than Interaction Analysis training and group discussion.

3.4. Study 4:

The Effects of Self-confrontation via TV and Discrimination Training plus Practice with Feedback (One Microteaching Cycle)

3.4.1. Participants of the Study

22 university students (12 male, 9 female ; $\bar{x}$ = 7 semesters studied at the University; various subject matter areas) volunteered for the study. They were randomly assigned to experimental and comparison groups. Due to organizational problems, one participant had to drop out of the comparison group.

Experimental group: n = 11 (semesters: $\bar{x}$ = 6.6)
Comparison group: n = 10 (semesters: $\bar{x}$ = 7.4)

3.4.2 Treatment and Design

After an introduction to course goals and organization, each participant of both groups taught a 15-minute Teacher Response Lesson (TRL) (see study 3) to a group of 5-6 peers and individually viewed the videotape of the teach (self-confrontation). Both groups were trained for 6-8 hours in the use of the Flanders Interaction Analysis Categories on the basis of Minicourse 4, part I (FWLERD 1972). Then both groups received a lecture introducing them to the interpretation of FIAC data on the basis of the timeline display and the 10 - 10 matrix (as in study 3), and worked with additional written training material on behaviors of category 3 of the FIAC system: "Accepting and using pupils ideas" (Klinzing et al. 1974; 80 pages).

After that, the experimental group went through one Microteaching cycle consisting of a 10-15 minute lesson (peerteaching), feedback (TV plus FIAC plus peer group discussion), a 10-15 minute reteach lesson and again feedback (TV plus FIAC plus peer group discussion).

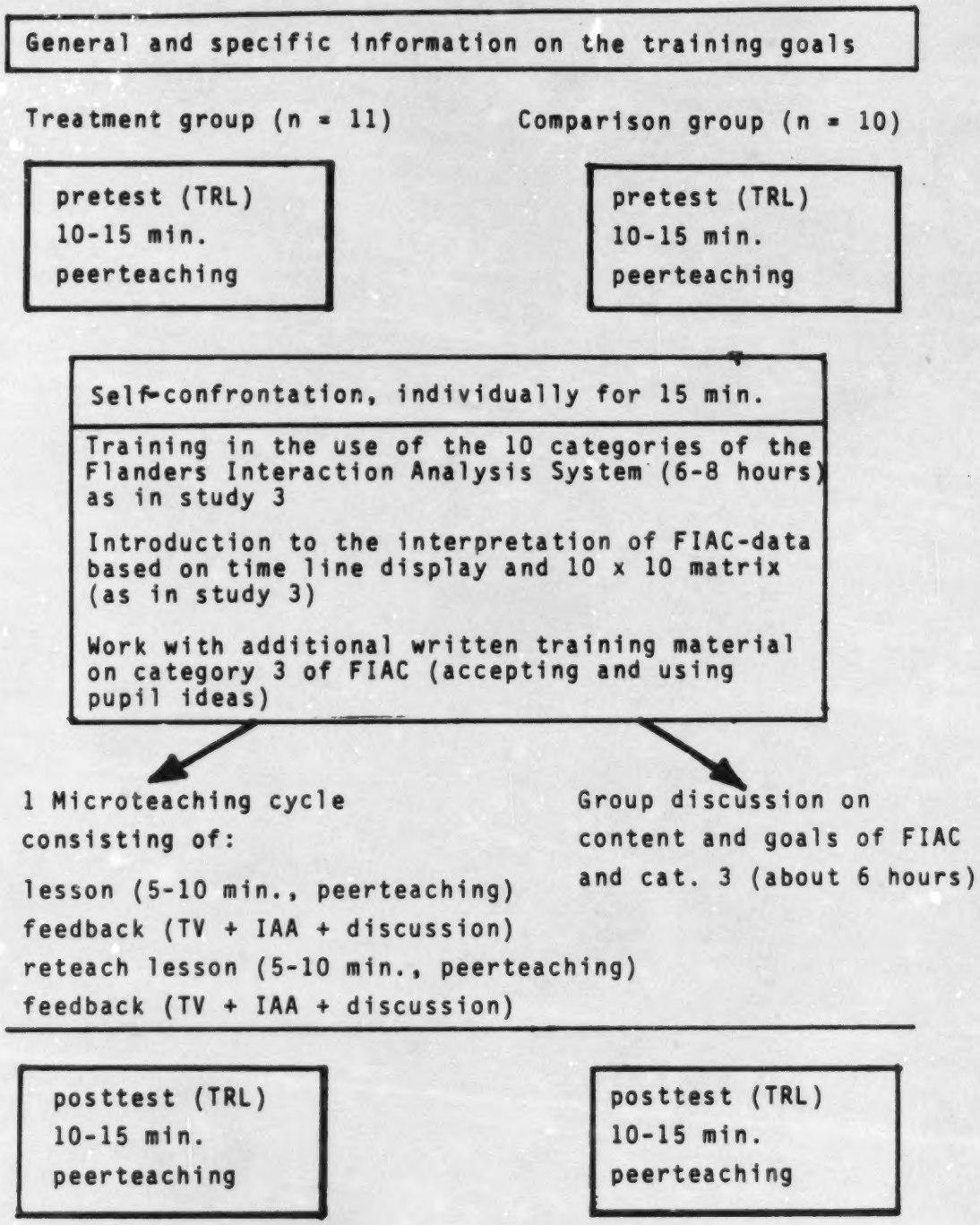
The comparison group had a group discussion on content and goals of the FIAC system and category 3 of the FIAC system (about 6 hours).

At the end of the course, both groups administered a posttest, teaching a Teacher Response Lesson under conditions comparable to the pretest.

So the design took the following form:

Figure 4: Design and Treatment of Study 4

Pretest - posttest - control group design


General and specific information on the training goals
Treatment group (n = 11)
Comparison group (n = 10)
pretest (TRL)
10-15 min.
peerteaching
pretest (TRL)
10-15 min.
peerteaching
Self-confrontation, individually for 15 min.
Training in the use of the 10 categories of the Flanders Interaction Analysis System (6-8 hours) as in study 3
Introduction to the interpretation of FIAC-data based on time line display and 10 x 10 matrix (as in study 3)
Work with additional written training material on category 3 of FIAC (accepting and using pupil ideas)
1 Microteaching cycle consisting of:
lesson (5-10 min., peerteaching)
feedback (TV + IAA + discussion)
reteach lesson (5-10 min., peerteaching)
feedback (TV + IAA + discussion)
Group discussion on content and goals of FIAC and cat. 3 (about 6 hours)
posttest (TRL)
10-15 min.
peerteaching
posttest (TRL)
10-15 min.
peerteaching

3.4.3. Data Source

Two independent observers coded the first 10 minutes of all pre- and posttests. The tapes were randomly assigned to them.

Observer agreement with a standard observer was: $\pi = 0.85$, the observer agreement with each other was: π 0.86 (Scott-coefficient, modified by Flanders, 1967).

For the expanded FIAC System, see Table 4.1.

Table 4.1: The FIAC System Expanded for Study 4 (1)

Cat.	Description
1	Acceptance of feelings
2	Praise/encouragement
3A	Acknowledgement of discussion members' ideas
3U	Use of discussion members' ideas
3	Acceptance and use of discussion members' ideas
4N	Narrow questions
4B	Broad questions
4	Questioning
5	Lecturing
6	Giving directions
7	Criticism
8	Discussion members' talk - response
9A	Discussion members' talk - initiative - acknowledgement of other discussion members' ideas
9U	Discussion members' talk - initiative - use of discussion members' or moderator's ideas
9	Discussion members' talk - initiative
10	Silence and confusion

$$\text{Pupil Talk Ratio (PTR)} = \frac{\text{cat. } 8 + 9}{\text{cat. } 1 \ldots 10}$$

$$\text{Indirect/Direct Ratio (IDR)} = \frac{\text{cat. } 1 + 2 + 3 + 4}{\text{cat. } 1 \ldots 7}$$

3.4.4. Results

Tables 4.2 and 4.3 summarize the results.

Table 4.2 : Comparison of Change Rates Between Pretest and Posttest of the Experimental (n=11) and Comparison Group (n=10). Means, Standard Deviations, Wilcoxon-, and Mann-Whitney-U-Tests for the Expanded FIAC-System.

Cat.	Test	Experimental Group $\bar{I}$ (%)	s	U-Test p<	Comparison Group $\bar{I}$ (%)	s	U-Test p<	U-Test: Comparison of Change Rates p<
1	pre	0.00	0.00	---	0.00	0.00	---	---
	post	0.00	0.00		0.00	0.00		
2	pre	0.15	0.35	---	0.16	0.35	---	---
	post	0.14	0.24		0.31	0.53		
3	pre	5.11	3.30	0.02	5.44	3.87	0.02	---
	post	8.78	3.77		7.53	3.28		
3A	pre	2.62	2.02	---	4.05	2.70	---	---
	post	2.95	1.74		4.18	3.12		
3V	pre	2.48	2.65	0.01	1.39	1.39	0.01	nearly sign. by p = 0.05
	post	5.81	3.64		3.35	1.20		
4	pre	4.33	3.59	---	5.07	4.39	---	---
	post	3.28	2.71		4.13	3.41		
4B	pre	1.49	2.72	nearly sign. by p = 0.05	0.37	0.85	---	0.02
	post	0.28	0.27		0.88	0.93		
4B	pre	2.84	2.47	---	4.70	3.39	---	---
	post	2.99	2.65		3.28	3.03		
5	pre	35.81	19.80	0.01	23.78	9.82	---	0.02
	post	17.38	12.34		24.33	8.00		
6	pre	0.10	0.22	---	0.58	0.85	---	---
	post	0.10	0.31		0.26	0.38		
7	pre	0.05	0.16	---	1.42	1.60	---	---
	post	0.19	0.38		1.84	2.32		
8	pre	6.86	9.16	---	5.61	3.53	---	---
	post	3.47	2.90		4.40	1.88		
9	pre	48.35	22.39	0.02	54.38	15.44	---	0.05
	post	64.80	13.42		54.18	11.62		
9A	pre	1.84	2.10	---	0.89	0.97	---	---
	post	1.19	0.78		0.48	0.80		
9U	pre	1.32	1.27	0.05	2.28	3.25	---	---
	post	3.38	2.67		3.68	2.66		
10	pre	0.92	1.03	---	3.08	3.01	---	---
	post	1.33	0.72		2.50	1.03		

Two-tailed test.

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Table 4.3 : Comparison of Change Rates Between Pretest and Posttest of the Experimental and Comparison Groups (n=11/10). Means, Standard Deviattions, U-Tests, and Effect Sizes for Two Flanders Ratios.

Ratio	Test	Experimental Group $\bar{X}$ (%)	s	M-Test p≤	Comparison Group $\bar{X}$ (%)	s	M-Test p≤	U-Test: Comparison of Change Rates p≤	ES: Experimental vs. Comparison Group (posttests)
PTR	pre	0.53	0.17	0.01	0.60	0.14	---	0.05	0.91
	post	0.69	0.11		0.59	0.11			
IDR	pre	0.25	0.18	0.02	0.27	0.14	---	0.05	0.85
	post	0.44	0.17		0.31	0.13			

Two-tailed test.

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Tables 4.2 and 4.3 show significant gains in behaviors of categories 3 and 3U (accepting and using discussion participants' ideas) for both the experimental and comparison groups.

In contrast to an increase in the amount of narrow questions (4N) in the comparison group, the experimental group revealed a decrease (almost significant) in this variable as well as in lecturing behaviors (cat. 5). In addition, significant increases could be observed in the experimental group in the discussion moderator's indirect behaviors (IDR), in discussion members talk (PTR), particularly in iniative behaviors (cat. 9), and in the use of discussion members' ideas by their peers (cat. 9U).

The comparison of change rates of the experimental and comparison groups from pretest to posttest were statistically significant in categories 4N and 5; nearly significant in category 3U; and significant in both of the Flanders Ratios: PTR and IDR. The effect sizes of the experimental and comparison groups in the posttest show considerable differences in favor of the experimental group with the variables PTR and IDR.

These results suggest that self-confrontation plus extensive discrimination training (FIAC-training) aiming at very specific behaviors like using the ideas of discussion members plus group discussion is effective in altering these behaviors. For changes beyond these specific behaviors, at least some practice turns out to be desirable.

SUMMARY / CONCLUSIONS

4.) Summary / Conclusions

It is assumed that a teacher training program should contain self-confrontation via TV and training in the skills of unstructured and structured observation as a tool for making future teachers aware of behaviors involved in human interaction (e.g. Smith, 1970). Since the early 1960's, Microteaching, carefully prepared lessons in a series of five to ten-minute encounters with a small group of students, was suggested as an additional training component (Allen, ed. 1967; Allen and Ryan 1969; Zifreund 1966, 1968). Evaluations of training programs containing combinations of components like self-confrontation, discrimination training, and practice in scaled-down, specially designed training situations, indicate consistently positive effects on behavioral changes (1), in contemporary teacher education where the advantages of laboratory training seem mostly forgotten. Methods such as lecture and/or discussion, unstructured observation and practice in the normal classroom with occasional self-confrontation, traditional mainstays of preservice programs, are still commonly found in teacher education, even though these methods did not prove to be very effective in the skill acquisition programs (e.g. Peck and Tucker, 1973; Gall et al., 1974; Klinzing 1982).

The studies reported here are part of a research program at the Center for New Learning Methods of the University of Tuebingen (West Germany). They were to investigate components of teacher training, their characteristics, and the most effective sequence for changing behavior, in the context of preservice teacher training programs. The behavior under investigation was discussion moderator's behavior. It was intended that this behavior, based on Flanders' system (Flanders 1970), be changed to a more indirect, constructively responding-type behavior.

1) See the research reports of: Cooper and Allen 1969; Sadker and Cooper 1972; Peck and Tucker, 1973; Fuller and Manning, 1973; Turney et al. 1973; Klinzing 1982.

Table 5 summarizes the results of the four studies in terms of effect sizes (comparison of the posttest of the experimental and comparison groups) for two Flanders ratios representing the main goals of the training programs.

Table 5:

Effect Sizes: Comparison of the Posttests of the Experimental and Comparison Groups of Four Studies for Two Flanders Ratios

Study/Test	P T R (Experimental vs. Comparison Groups)	I D R (Experimental vs. Comparison Group)
STUDY 1		
Posttest I	0. 40	- 0. 43
Posttest II	0. 24	0. 39
STUDY 2		
Posttest I	- 0. 78	0. 00
Posttest II	- 0. 17	1. 13
STUDY 3		
Posttest 1 (TIL)	- 0. 10	0. 21
Posttest 2 (TRL)	- 1. 14	0. 22
Posttest 1,II (TIL)	- 0. 66	- 2. 10
Posttest 2,II (TRL)	- 0. 84	- 0. 89
STUDY 4		
Posttest	0. 91	0. 85

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One single incident of post microteach self-confrontation via TV does not lead to the intended effects (study 1). If group feedback discussion is provided as an additional focus based on the videotapes of the microteaches (1), there is some behavioral change. This change does not occur immediately but only after a second try when the insights gained in the teach-feedback discussion cycle are translated into interaction behavior (study 2).

The combination of self-confrontation via TV and discrimination training (a 10-hour FIAC training) did not have the intended effects. Only when combined with additional practice (two micro-teaching trials) could relevant effects be observed (study 3). The resulting effectiveness of the combination of discrimination training with practice in a scaled-down training situation (with feedback), is supported by study 4.

The results obtained in this series of studies are consistent with those of other research. While the results on effects of discrimination training are inconclusive, the results of a relatively large number of studies indicate that some opportunities to practice applying the respective teaching skills are necessary.

In six studies positive effects were obtained when trainees received discrimination training while viewing models or during feedback sessions (McDonald and Allen 1967; Orme 1966; Claus 1969; Young 1969; Fuller et al. 1966; Morse et al. 1970).
In approximately twenty studies (reported by Peck and Tucker, 1973) where different kinds of discrimination training based on interaction analysis systems (e.g. Withall, 1949; Flanders 197o) were provided, a training success was achieved only in studies which contained some active use of these instruments by the trainees. In studies dealing merely with knowledge of the categories of an observation instrument, no significant results were obtained (Storlie, 1967; Ranson, 1969; Tuckman et al., 1969; Luebkeman, 1966).
The suggestion for providing practice opportunities in addition to cognitive discrimination training can be reached after looking at about thirteen studies on the training of teaching skills where instruction and discrimination training where shown to be less effective than adding some practice to these treatments (Davis and Smoot, 1969; Morse and Davis, 1970; Reed et al., 1970; Chavers et al., undated; Acheson and Zigler, 1971; Gall et al., 1974; Langer and Allen 1970; Nuthall, 1976; Veenman, 1974; Thiele, 1978; McLeod et al., 1977).

(1) Structured by the rules suggested by W. Zifreund (1966, 1968).

Only three studies seem to contradict to this trend. Training in coding classroom interaction supplemented by Microteaching practice was no more effective than only providing training in coding classroom interaction (Wagner 1973), or simply providing instruction (lecture and/or models or pictures) on the behaviors to be emphasized in the training program (Borg et al., 1969; Pancrazio and Johnson, 1971). In the study of Wagner (1973) a treatment with two practice opportunities was provided without the trainees having a clear idea of what to practice and what to demonstrate in the final test. And this was compared with discrimination training (without practice). As was to be expected, the discrimination training group outperformed the group that had had practice. In the study of Borg et al. (1969), a number of organizational problems arose in conducting the Microteaching training, so the treatment differences between the groups having the Microteaching practice and those with no Microteaching practice (only the normal student teaching) were not big enough to result in performance differences. The same applies to the study of Pancrazio and Johnson (1971) where there was a videotape demonstration, a lecture-discussion based on still pictures (40 minutes each), and a 10-minute Microteaching session with unsupervised videotape playback. These studies cannot cast doubt on the findings suggesting that practice in a scaled-down situation with feedback is necessary for changing teaching behavior.

The studies reported here and the consistent results from the evaluation of different approaches of Microteaching, a method which does combine all the elements mentioned above, remind us that there <u>are</u> effective methods for a practice-oriented teacher training. They need only to be re-discovered and restructured for the use in the next decade.

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